

## Algae of The Three Kings Islands, New Zealand

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At the end of 1952 and the beginning of 1953 an expedition from the Auckland Museum visited the Three Kings group of Islands. Mr. J. Edwards, a member of the expedition, collected algae from various places, and these were handed to the present author for identification. The marine algae were generally those that are to be found on rocky coasts elsewhere in the Auckland Province (Chapman, 1950; Chapman and Beveridge, 1950; Dellow, 1950; Carnahan, 1952). There were, however, two outstanding items in the collection. The first was a new species of brown alga allied to *Sporochnus* with unusual features intermediate between typical *Sporochnus* species and the genus *Bellotia*. The other was a new species of the genus *Grateloupia*, which will be described in a separate communication by Miss J. Trevarthen. The new records suggest that a more detailed study of the north coast of the North Island should be very profitable.

General collection, S.E. Bay, Great Island, 8th January, 1953:

### Chlorophyceae

- Ulva* sp. (sporelings only).
- Cladophoropsis herpestica* (Mont.) Kuetz.
- Caulerpa sedoides* (R. Br.) C. Ag.

### Phaeophyceae

- Ecklonia radiata* (C. Ag.) J. Ag.
- Xiphophora chondrophylla* (R. Br.) Mont. var. *minus* J. Ag.
- Halopectis hordacea* (Harv.) Sauv.
- Perithalia capillaris* J. Ag.
- Sargassum verruculosum* (Mert.) J. Ag.
- Sargassum* sp. (material not sufficient for identification. Mr. Lindauer has had the same material from the north but never in a state to permit of identification—personal communication).

### Rhodophyceae

- Caulacanthus spinellus* (Hook. f. et Harv.) Kuetz.
- Gelidium caulacanthum* J. Ag.
- Pterocladia lucida* (R. Br.) J. Ag.
- Vidalia colensoi* (Hook. f. et Harv.).

- Phacelocarpus labillardieri* (Mert.) J. Ag.  
*Melanthalia abscissa* (Turn.) Hook. f. et Harv.  
*Corallina gracilis* Lam. var. *lycopodioides* Taylor.  
*Lithothamnion* sp. (not fruiting).  
*Bostrychia arbuscula* Hook. f. et Harv.  
*Ballia callitricha* (C. Ag.) Mont.  
*Laurencia* sp. (very young, possibly *L. thrysifera*).  
*Lophosiphonia macra* (Hook. f. et Harv.) Fkbg.  
*Polysiphonia* sp. (*corymbifera*?) 12-14 siphons.

Our knowledge of the New Zealand species of *Polysiphonia* is not sufficient for accurate identification. *P. corymbifera* C. Ag. is the only species recorded for New Zealand with this number of siphons.

General collection, N.W. Bay, Great Island, 8th January, 1953:

### Chlorophyceae

- Caulerpa sedoides* (R. Br.) C. Ag.

### Phaeophyceae

- Perisporochnus regalis* n. sp.  
*Carpophyllum plumosum* (A. Rich.) J. Ag.  
*Carpophyllum maschalocarpum* (Turn.) Grev.  
*Xiphophora chondrophylla* (R. Br.) Mont. var. *minus* J. Ag.  
*Sargassum sinclairii* Hook. f. et Harv.  
*Sargassum undulatum* J. Ag.  
*Sargassum verruculosum* (Mert.) J. Ag.  
*Landsburgia quercifolia* Hook f. et Harv.

### Rhodophyceae

- Porphyra columbina* Mont.  
*Nemastoma oligarthra* (J. Ag.) Kylin.  
*Grateloupia* sp. nov\*  
*Grateloupia fastigiata* J. Ag.  
*Corallina gracilis* Lamour.  
*Calophyllis hombroniana* (Mont.) Kuetz.  
*Gigartina circumcincta* J. Ag.  
*Gymnogongrus nodiferus* (C. Ag.) J. Ag.  
*Laurencia* sp. (young).

South East Bay, Great Island, 7th January, 1953. (Two collections.):

### Chlorophyceae

- Ulva* sp. (sporelings).

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\* To be described separately.

**Rhodophyceae**

- Gelidium pusillum* (Stackl.) Le Jol.  
*Gelidium pseudointricatum* Skottsb. et Leur.  
*Catenella fusiformis* J. Ag.  
*Laurencia thrysifera?* J. Ag. (denuded).  
*Bostrychia arbuscula* Hook. f. et Harv.

North West Bay, Great Island, *Corallina* zone, 5th January, 1953:

**Chlorophyceae**

- Ulva* sp. (sporelings).

**Rhodophyceae**

- Corallina gracilis* Lamour.  
*Nemastoma oligarthra* J. Ag.  
*Grateloupia* sp. nov.  
*Laurencia thrysifera* J. Ag. (?) denuded.

South East Bay, Great Island, 7th January, 1953:

**Myxophyceae**

- Calothrix confervicola* (Roth.) Ag.

**Chlorophyceae**

- Rama longiarticulata* (J. Ag.) Chapman (see Chapman, 1951).

**Rhodophyceae**

- Gelidium pusillum* (Stackl.) Le Jol.  
*Catenella nipae* Zanard.  
*Bostrychia arbuscula* Hook f. et Harv.

Tasman Stream (fresh water), Great Island. Collections 30th December, 1952, and 5th January, 1953:

- \**Oedogonium* sp. (not fruiting).  
*Spirogyra* sp. (not fruiting).  
 \**Vaucheria* sp. (not fruiting).  
*Ulothrix tenerrima* Kuetz.  
 \**Microspora* sp.  
 \**Rhizoclonium riparium* Harv.

*Scytonema cincinnatum* (Thur.).

The species marked \* were also collected from a pool at the edge of the Tasman Stream.

**Perisporochnus** n. gen.

Plantis ex haustorio coniformi orientibus, axe primario ramis et ramulis vestito, ramis ramulos spiraleriter ferentibus; axe et ramis uniformiter constantibus e parvis cellulis, cum singula serie epidermali

cellularum magnarum; sporangiis unilocularibus lateraliter natis in paranematis dichotomose ramosis.

Plants arising from a conical holdfast, main axis clothed with branches and branchlets, branches bearing branchlets in whorls; axis and branches uniformly composed of small cells with a single epidermal layer of large cells; unilocular sporangia borne laterally on dichotomously branched paranemata.

Type: *Perisporochnus regalis* n. sp.

***Perisporochnus regalis* n. sp. Pl. 1; figs 1, 2.**

Plantis ad 24 cm longis orientibus ex haustorio coniformi rhizoidibus septatis operto, axe primario per totam longitudinem multis ramis et ramulis dense vestito; axe et ramis constantibus e parvis cellulis cum singula serie magnarum cellularum epidermalium, parietibus crassatis sed per foveas tenuiparietales distinctis; ramis ramulos spiraliter ferentibus; ramulis plerumque simplicibus, raro cum laterali brevi, per receptaculum tumescens et cristam capillorum terminatis; pedicello 2-5-ies longiore quam crista apicali; capillis simplicibus, 40-70u diametro in regione basali meristemata, apud apicem ad 140u expansioribus; sporangiis unilocularibus 30-34u longis, 11-11.5u latis, lateraliter natis in paranematis dichotomose ramosis.

Plant up to 24 cm. long, arising from a conical holdfast covered with septate rhizoids, main axis densely clothed throughout its length with numerous branches and branchlets; axis and branches composed of small cells with one row of large epidermal cells, walls thickened but studded with thin walled pits; branches bearing branchlets in whorls; branchlets usually simple, rarely with a short lateral, terminating in swollen receptacle and tuft of hairs; pedicel 2-5 times longer than the apical tuft; hairs simple, 40-70 u diameter in basal meristematic region, expanding to 140 u at apex; unilocular sporangia 30-34 u long x 11-11.5 u wide, borne laterally on dichotomously branched paranemata.

Type specimen in herb. Auckland Inst. and Museum.

The whole plant is much coarser than are species of *Sporochnus* and it also differs from *Sporochnus* in the whorled arrangement of branchlets on the branches. In this latter respect it is more like *Bellotia*, but it differs from that genus in having the sporangia concentrated terminally instead of medially, and the paranemata are typically Sporochnelean in being dichotomously branched. Anatomically it differs from *Sporochnus* and *Encyothalia* in that there is no evidence of any larger central cells, the entire main axis and branch axes being composed of a mass of uniform thick-walled small cells, perforated here and there, especially towards the periphery, with thin-walled pores, though these are not true sieve plates. The outermost layer is composed of large cells also with thin-walled pores, restricted to the inner wall and the inner half of the lateral walls. Anatomically it appears to have affinities with *Perithalia*, which also has a similar structure and lacks the characteristic large central cells. The new genus therefore lies intermediately between *Sporochnus*, *Bellotia* and *Perithalia*.

I wish to express my thanks to Mr. W. A. Crawley, of Auckland University College, for the latin diagnoses. Dr. Drouet of the Chicago Natural History Museum, identified the *Scytonema cincinnatum*.





Fig. 1. *Perisporochnus regalis*, n. sp. (a) Branchlet with swollen receptacle; (b) branchlet with branch; (c) main branch showing whorled lateral branchlets; (d) single paranemata (a-b x 2; c x 1).

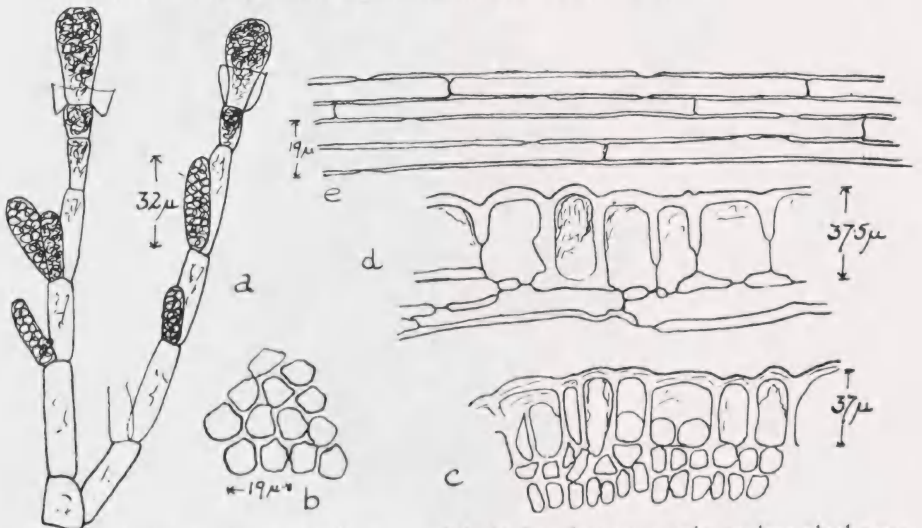


Fig. 2. *Perisporochnus regalis* n. sp. (a) Unilocular sporangia on branched paranemata; (b) central cells of main axis; (c) t.s. main axis showing row of large epidermal cells and small cells within; (d) l.s. epidermal cells enlarged to show pits; (e) l.s. central cells showing pits.

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*Perisporochmus regalis* n. sp. type specimen (x .8).